AQA GCSE Chemistry | 8462

SPECIFICATION POINT 4.3.1.3

Mass changes when a reactant or product is a gas

Mark schemes and examiner comments

Tier	**Higher**
Question groups	**6**
Available paper years	**2009–2022**

Using this booklet

1. Booklet answer numbers match the question booklet.
2. Use the original question number within marking tables.
3. Examiner comments are included where available.

Name: _____ **Date:** _____

Where a precise marking extract is unavailable, the full source document is included in an appendix. Any missing mark scheme is explicitly identified.

4.3.1.3 Mass changes when a reactant or product is a gas

Answer 01 · Mark scheme March 2009 | CHY1AP | Original Q7 | Legacy

Seven	**3**	**3**	**4**	**4**

Answer 02 · Mark scheme June 2009 | CHY1AP | Original Q3 | Legacy

Three	**2**	**3**	**1**	**2**

Answer 03 · Mark scheme March 2011 | CHY1AP | Original Q3 | Legacy

Three	**1**	**2**	**1**	**4**

Answer 04 · Mark scheme June 2011 | CHY1AP | Original Q7 | Legacy

Seven	**4**	**3**	**2**	**2**

4.3.1.3 Mass changes when a reactant or product is a gas

Answer 05 · Mark scheme

June 2014 | CH1HP | Original Q5 | Legacy

Question	Answers	Extra information	Mark	AO / Spec. Ref.	ID
5(a)	(thermal) decomposition	accept limestone decomposes allow endothermic	1	1 / 1.2.1b	E
	(to produce) calcium oxide / *CaO* **or** *quicklime*	accept a correct word or chemical equation for the last two marking points	1		
	(to produce) carbon dioxide / CO_2		1		
5(b)(i)	1.8(g)	*accept correct answer with or without working* accept $1.8 + 1.9 + 1.7 \div 3$ for **1** mark if no other mark awarded allow **1** mark for 1.6(g) or any calculation with one error	2	2 + 3 / 1.2.1b	E
5(b)(ii)	the limestone was not pure (calcium carbonate) **or** *contained impurities*		1	2 + 3 / 1.2.1b	E
	so less carbon dioxide was produced		1		
	the temperature was not high enough	allow not heated for long enough	1		
	so the limestone / *calcium carbonate* did not fully decompose / *react*		1		
Total			**9**		

4.3.1.3 Mass changes when a reactant or product is a gas

Answer 05 · Mark scheme

June 2014 | CH1HP | Original Q5 | Legacy



4.3.1.3 Mass changes when a reactant or product is a gas

Answer 06 · Mark scheme

June 2022 | 8462/2H | Original Q2

Question 2

Question	Answers	Extra information	Mark	AO / Spec. Ref.
02.1	24.5 (g)		1	AO2 4.6.2.2

Question	Answers	Extra information	Mark	AO / Spec. Ref.
02.2	water vapour was produced	allow steam for water vapour allow water was produced as a gas	1	AO2 4.3.1.3 4.6.2.2
	(so) water (vapour) escaped (from the tube)	allow (so) the mass of the water (vapour) was not measured	1	

Question	Answers	Extra information	Mark	AO / Spec. Ref.
02.3	(so that) the reaction was complete	allow (so that) no more water (vapour) was produced	1	AO3 4.6.2.2

4.3.1.3 Mass changes when a reactant or product is a gas

Answer 06 · Mark scheme

June 2022 | 8462/2H | Original Q2

Question	Answers	Extra information	Mark	AO / Spec. Ref.
02.4	(energy =) $\frac{2.00}{238} \times 88.1$ = 0.740336134 (kJ) = 0.740 (kJ)	 allow an answer correctly calculated to 3 significant figures from an incorrect calculation which uses all the values in the question	1 1 1	AO2 4.6.2.2

Question	Answers	Extra information	Mark	AO / Spec. Ref.
02.5	endothermic (reaction)	allow reversible (reaction) allow (thermal) decomposition (reaction)	1	AO1 4.6.2.2

Total Question 2		8

4.3.1.3 Mass changes when a reactant or product is a gas

Answer 06 · Examiner comments

June 2022 | 8462/2H | Original Q2

Question 2 (Standard demand)

02.1 The majority of students correctly determined the mass of the empty test tube as 24.5g.

02.2 A number of inaccurate responses referred to the unspecified contents of the test tube evaporating when heated causing a decrease in the mass. Specific reference to water (vapour) or steam evolving was only given by a minority of students for the first marking point. Fewer students realised that the escape or loss of water from the test-tube completed the explanation. Around a third of the students scored both marks.

02.3 The indication that the reaction was complete or finished was needed. Similarly the idea that all of the water had been given off, or that only anhydrous cobalt chloride was left, gained credit. Mentioning that the reaction had stopped was insufficient. Around half of the students gained this mark.

02.4 The calculation discriminated well. Over half of the students scored all three marks by completing the calculation, usually showing full details of their working.

The final marking point was awarded for giving the answer to 3 significant figures. Some students gained this mark for an incorrect calculation (usually by inverting the fraction and only if they used data given in the question) expressed correctly to 3 significant figures.

02.5 Exothermic and chemical were common incorrect responses. Appproximately three-quarters of students scored this mark.